

ACCELERATING SERVICE DELIVERY IN JOHANNESBURG

CoreCivils' unique precast-concrete system has enabled the Johannesburg Roads Agency (JRA) and its professional team to significantly accelerate the construction of a pedestrian bridge in Kaalfontein, Gauteng.

Crossing a stream that traverses this large community, the 100 m-long and 3,5 m-wide bridge will help authorities evacuate residents during flood conditions, while also significantly improving mobility by providing a direct connection between Flashlight Fish and Trout Fish Streets.

CoreCivils' system comprises conventionally reinforced precast-concrete beams and hollow-core slabs that are supported by two in-situ concrete piers.

The company proposed the use of hollow-core slabs as opposed to rib-and-block slabs between the precast-concrete beams to provide a faster and more accurate means of constructing the superstructure.

These modifications to the original design were accepted by the design engineer, BMK Consulting Engineers, which is also overseeing the construction programme on behalf of the JRA.

Jaco de Bruin, managing director of CoreCivils, says that the company installed the precast-concrete beams and hollow-core slabs in only a day.

"The hollow-core slabs were manufactured and cut to size at our factory so that they could be placed directly on top of the precast-concrete beams. This eliminated the need to first install extensive propping before being able to cast the rib-and-block slabs. Meanwhile, our approach was also better suited to working in an extremely built-up environment and mitigating the need to coordinate construction materials to the site via a very narrow gravel road that services this large community," De Bruin says.

CoreCivils mobilised to site once Axton Matrix's team had built the two in-situ concrete piers and abutments, as well as the approach ramps and their walls. The precast-concrete elements were

dispatched from the company's factory and lifted directly from the truck trailers using a mobile crane that was positioned on the north-facing side of the bridge.

CoreSlab established its crane on site early in the morning ahead of the arrival of the various elements.

Working in very marshy terrain, Axton Matrix had to first construct a secure platform for the crane. It comprised a 700 mm-thick G5 material that was sufficiently compacted to provide the stability needed to lift and place the heavy precast-concrete elements. These included the 14 precast-concrete beams, two per span and each weighing four tons and 15 m in length.

Axton Matrix was able to commence working on the remaining portion of the superstructure immediately after CoreSlab had installed the hollow-core slabs.

The hollow-core slabs are first covered with polystyrene moulds with voids to reduce the load of the 150 mm-thick final concrete slab on the precast-concrete beams. Services are then installed on top and covered with a steel mesh to reinforce the final slab.

The in-situ works, including the sides of the structure, are extremely labour intensive and about 17 members of the community have had an opportunity to work alongside Axton Matrix's team on this project.

Meanwhile, an additional 20 people will be employed to work on the extended work scope, which includes the construction of about 70 m of asphalt roads and sidewalks. This is in addition to the installation of storm-water drainage, curbing and wing walls.

The project is, therefore, another sound example of the complementary role that precast-concrete is able to play in traditional labour-based Expanded Public Works

Programme projects.

Notably, there has also been no safety or injury-related incidents on this project, despite working at heights and within close proximity to many dwellings.

Valued at more than R13-million, the project is one of numerous pedestrian bridges that are currently being built by the JRA in the larger Midrand area as part of the City of Johannesburg's R103,4-million investment into low-income communities.

CoreCivils is also working with Axton Matrix on the construction of another similar pedestrian bridge in Diepsloot, Gauteng.

De Bruin congratulates Axton Matrix for its stellar work on both projects, noting that CoreCivils established a sound rapport with this reputable contractor in 2016 when both companies worked together on a bridge project in Ga-Ntata, Limpopo.

"Certainly, we look forward to building on this already-strong working relationship with Axton Matrix moving forward," he concludes. ■



The hollow-core slabs are first covered with polystyrene moulds with voids to reduce the load of the 150 mm-thick final concrete slab on the precast-concrete beams. Services are then installed on top of the polystyrene moulds and covered with a steel mesh to reinforce the slab.